ERM

ERM SUSTAINABILITY REPORT 2024

Climate Supplement

Sustainability is our business

Introduction

This document comprises the Climate Supplement to ERM's Sustainability Report 2024. Consistent with our commitment to accountability and transparent reporting for our stakeholders, this Supplement provides detailed information on ERM's approach and latest performance in respect of our strategic commitment to deliver net-zero across our operations. Included within this supplement is:

- Introduction to ERM's Decarbonization Strategy which is published alongside this supplement
- Our FY24 Performance Data: detailing our Scope 1, 2 and 3 emissions data for FY24
- Our FY24 Beyond Value Chain Mitigation: detailing our approach to mitigation of our residual emissions

This supplement should be read in conjunction with the Climate section of the Sustainability Report and ERM's Decarbonization Strategy, published alongside this Supplement and Sustainability Report.

Refer to the following documents for climate-related information:

Climate section of Sustainability Report	Detailing our approach to climate as a material topics for our business and headlines of our FY24 performance
Climate Supplement	Providing further detail on our FY24 performance including our methodological approach
Decarbonization Strategy	Outlining our strategic approach to decarbonization of our operations going forward

Delivering net-zero

As the world's largest advisory firm focused solely on sustainability, we understand both the magnitude of the climate crisis and our responsibility to help address it. We are committed to demonstrating climate leadership through incremental decarbonisation across our value chain:

- Decarbonising our own operations
- Supporting our clients to transition
- Working in partnership with our stakeholders to meet the ambition of the Paris Agreement on Climate

Climate is a key material issue for ERM. It is embedded in our strategic planning and operationalized through our global climate program which supports the delivery of our Decarbonization Strategy and our science-based emissions reduction targets aligned to the SBTi Net-Zero Standard.

For further details, refer to ERM's Decarbonization Strategy.

We contribute to climate leadership in three ways

FY24 Performance Data

Introduction

This section of the supplement provides a comprehensive overview of our FY24 GHG emissions data and includes further detail on our methodology and approach to our material sources of emissions.

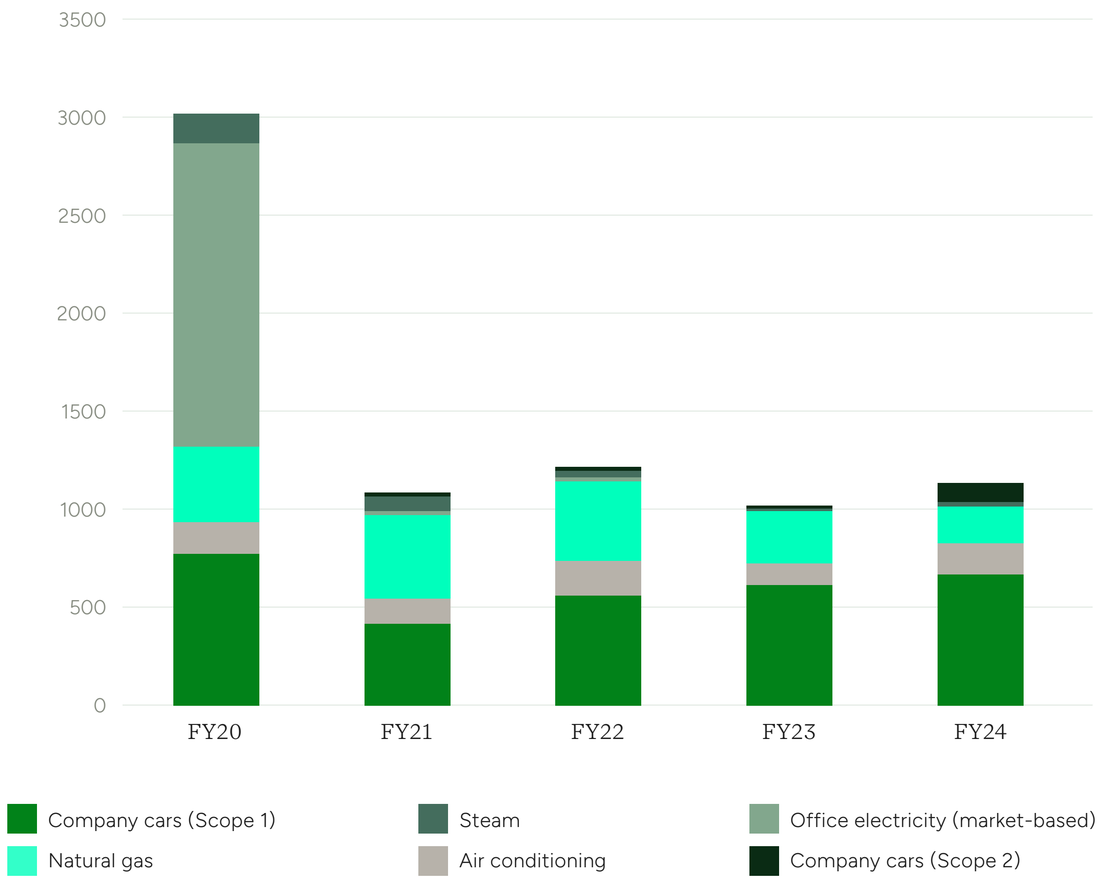
Summary of FY24 emissions

Tabulated below is a summary of ERM's GHG Emissions for the period April 1, 2023-March 31, 2024 (FY24)

Scope of GHG emissions	Tonnes CO2e
Scope 1 GHG emissions	1,037
Scope 2 GHG emissions (Location-based)[1]	1,750
Scope 2 GHG emissions (Market-based)[1]	126
Scope 3 GHG emissions Category 1 - Purchased Goods & Services	22,117
Scope 3 GHG emissions Category 2 - Capital Goods	1,467
Scope 3 GHG emissions Category 3 - Fuel and energy related activities[2]	716
Scope 3 GHG emissions Category 6 - Business Travel (internal)[3]	5,341
Scope 3 GHG emissions Category 6 - Business Travel (external)[3]	9,029
Scope 3 GHG emissions Category 7 - Employee Commuting	3,570
Total GHG emissions (Location-based)[4]	45,027
Total GHG emissions (Market-based)[4]	43,403

[1] Scope 2, Location-based and Scope 2, Market-based are defined in the WRI/WBCSD GHG Protocol Scope 2 Guidance, 2015
[2] Category 3 of Scope 3 was not part of FY24 external assurance, as this is an immaterial category, however we have started reporting on this in FY24.
[3] Business travel internal is non-project related travel and business travel external is project related travel.
[4] Please note: An Actualdata collection around office waste will be conducted in FY25, and ERM will start reporting emissions from Category 5. Transportation of subcontractors and goods purchased are included in Category 1 and emissions from ERM rented offices and leased vehicles are included in Scope 1 & 2 therefore Categories 4 & 8 have been determined as not applicable to ERM. All other scope 3 categories have been assessed as not relevant to ERM.

Scope 1 & 2 emissions (tCO2e)[1, 2]



[1] Scope 2 emissions are market-based

[2] Our Scope 1 sources include company cars, natural gas use and air conditioning losses. Our Scope 2 sources include office electricity, steam and electric / hybrid company cars.

There has been a marginal increase in our reported Scope 1&2 emissions for FY24, relative to FY23. This is attributed to:

- A small increase in the use of chillers in our offices (Scope 1) and comparable slight increase in vehicular use to support our in-field survey activity for clients (Scope 2)
- A change in our reporting approach and calculation methodology for emissions arising from air conditioning and hybrid vehicles.

Air conditioning use and maintenance

For offices where air conditioning maintenance is not available or is not conducted, we have taken a conservative approach of reporting this using office floor size estimation. In FY24, we have also seen the use of chillers in our offices which has been factored into our emissions reporting.

Hybrid vehicles

Since FY20 we have increased our global car fleet to electric or hybrid. Currently 40% of our global car fleet is electric or hybrid. Our scope 2 emissions associated with hybrid and electric cars have increased significantly compared to last year as a result of more accurate data on this type of vehicular use and mileage traveled.

Scope 1 emissions by region FY20 - FY24 (tCO2e)[1]

GRI 305-1

	Base year				Most recent year
Region	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**
Asia Pacific[2]	59	54	60	43	44
Europe Middle East and Africa	572	322	461	407	448
Latin America & Caribbean	26	14	29	32	43
North America	693	607	625	510	487
Global Businesses[3]	0	0	0	1	2
Group	0	0	0	11	14
Total	**1,350**	**997**	**1,175**	**1,004**	**1,037**

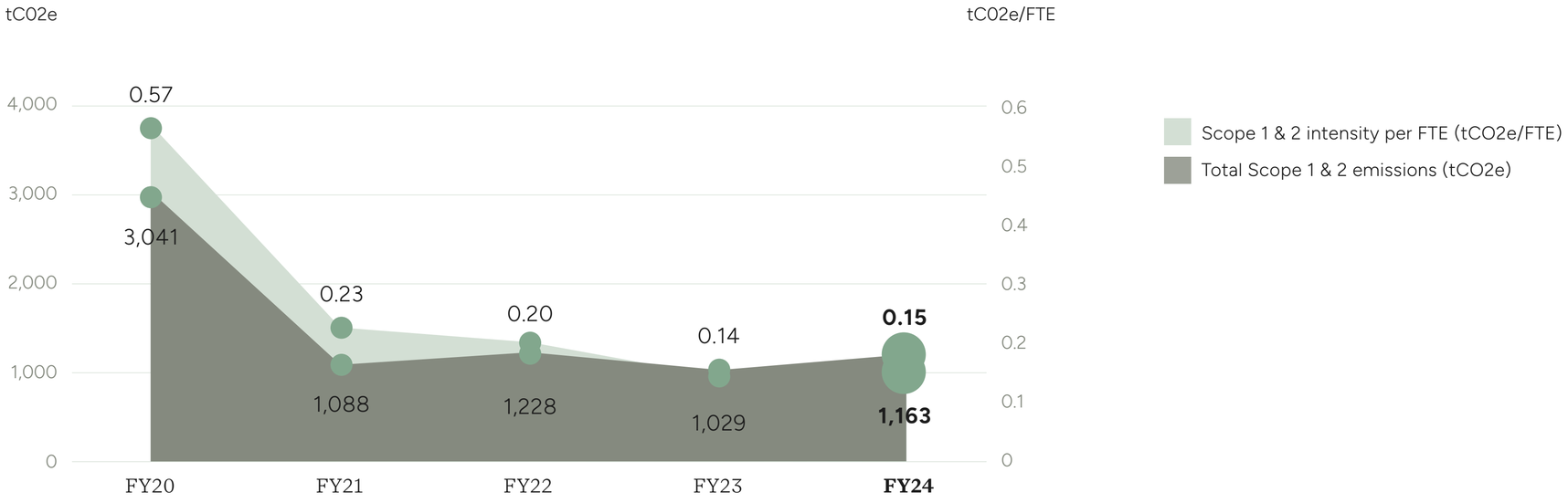
Scope 2 emissions by region FY20 - FY24 (tCO2e)[1, 2]

GRI 305-2

	Location based					Market based				
	Base year				Most recent year	Base year				Most recent year
Region	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**	**FY20**	**FY21**	**FY22**	**FY23**	**FY24**
Asia Pacific[3]	558	443	368	293	355	558	12	2	2	3
Europe Middle East & Africa	527	270	295	298	382	347	4	8	6	102
Latin America & Caribbean	51	45	36	42	42	51	0	9	0	0
North America	1,446	1,294	1,297	1,072	933	736	75	35	17	18
Global Businesses[4]	0	0	15	20	35	0	0	0	0	0
Group[5]	0	0	0	0	3	0	0	0	0	3
Total	**2,582**	**2,052**	**2,011**	**1,725**	**1,750**	**1,691**	**91**	**53**	**25**	**126**

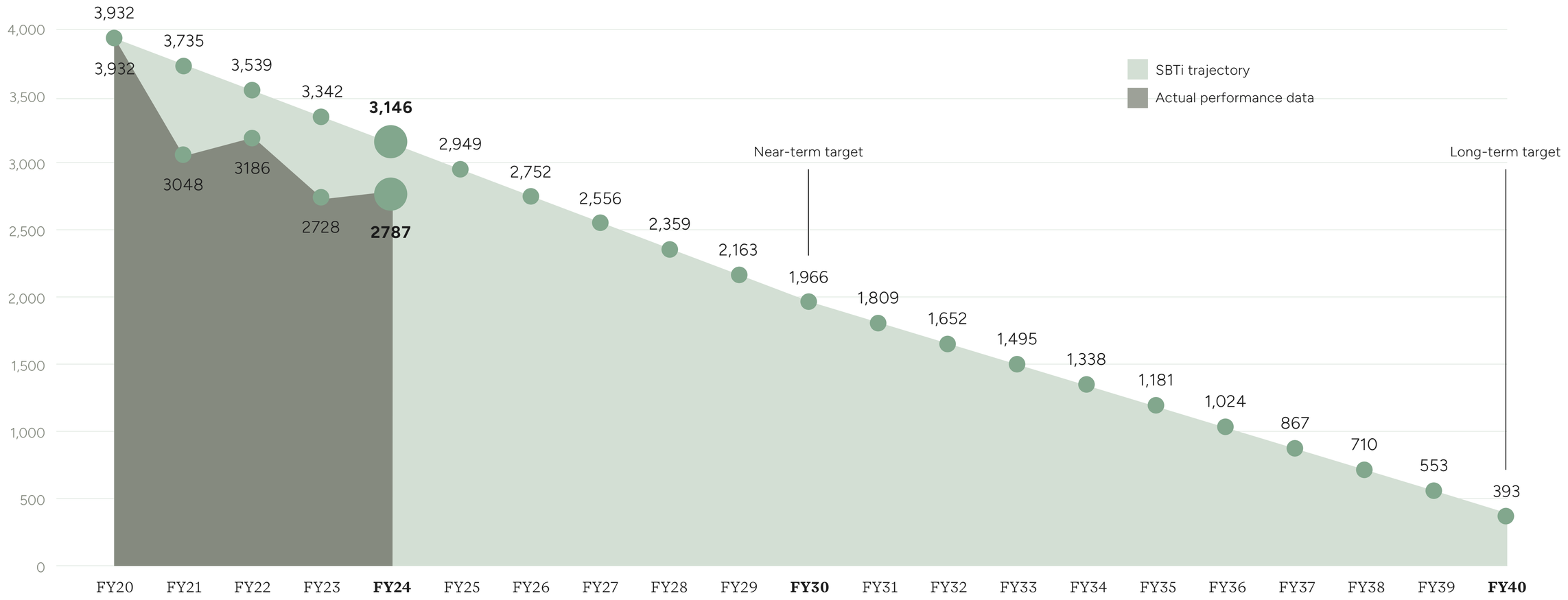
[1] Scope 2 includes indirect emissions from purchased electricity, steam and battery electric & hybrid company cars.
[2] Our Decarbonization Strategy is supported by Energy Attribute Certificates (EACs). Following the market-based method, ERM purchased EAC's against 100% of our residual Scope 2 emissions from electricity.
[3] Asia Pacific includes Australia and Asia.
[4] Global Businesses includes Climate Markets, CVS, Digital Products, Digital Services and Tech Enablement. Scope 2 emissions from Global Businesses and Group are included in the data for the ERM region in which employees' home offices are located. There are two offices under Global Business in Knoxville (Shelton Group) and Aberdeen (OPEX) reporting office energy.
[5] Electric/hybrid company cars used by Group employee is reported.

Scope 1 & 2 total emissions and intensity per FTE FY20 - FY24 (tCO2e)[1, 2, 3]



[1] Scope 1 & 2 GHG emissions normalized by average full-time equivalent employees (FTEs).
[2] tCO2e = tonnes of carbon dioxide equivalent.
[3] The Scope 2 emissions are market-based emissions.

Scope 1 & 2 performance against SBTi Net-Zero Standard trajectory FY20 - FY40 (tCO2e)[1, 2]



[1] ERM's near-term science-based target is to reduce absolute scope 1 and 2 GHG emissions 50% by FY30 from a FY20 base year. ERM's long-term science-based target is to reduce absolute scope 1 and 2 GHG emissions 90% by FY40 from a FY20 base year.

[2] Our Scope 2 target is location based. In addition to this, we have a renewable energy target to increase active annual sourcing of renewable electricity from 99% in FY23 to 100% by FY30.

Renewable energy

We have significantly reduced our Scope 2 emissions by switching to green energy contracts, purchasing renewable energy and implementing other energy efficiency measures. ERM has market instruments in place for 100% of our global energy portfolio. The renewable energy is sourced 11% by direct supplier contracts and 89% by purchased energy attribute certificates (EACs) including renewable energy certificates (RECs), International RECs (I-RECs) or Guarantees of Origins (GOs). For countries with emerging renewable energy markets, ERM procured out-of-market EACs.

In FY24, ERM procured 99% in-market EACs and 1% out-of-market EACs. The countries which we used out-of-market EAC include Guyana, Romania, South Korea and Spain. We will continue to track the development of sustainability guidelines in countries with emerging renewable attribute markets to achieve our SBTi target on renewable energy.

We evaluated our FY24 EAC procurement based on global standards for attribute tracking systems, technical criteria and market boundary criteria of our renewable energy claims. As a result, we chose to procure EACs from wind and solar technology that bears the EKOEnergy label wherever possible. EKOEnergy verifies to ensure renewable energy projects do not have a negative ecological impact on the local environment and dedicates a portion of funds to the development of new renewable energy projects in developing countries. In North America, we procured RECs from a project located in Texas called Briar Creek Solar.

Continuously reviewing the best standards in each market enables ERM to purchase EACs with the highest level of integrity and environmental quality.

FY24: Reviewing our approach to Scope 3 emissions

The update to the SBTi Net-Zero Standard (Version 1.1 issued in April 2023) provided new guidelines for the analysis and reporting of GHG inventories and targets. During FY23, we undertook a series of measures to support our preparation for alignment with the Net-Zero Standard, including rebasing our FY20 data and Scope 3 profile improvement. Further in FY24 during SBTi validation process, certain changes were made to our GHG inventory as per the suggestion of SBTi, which are summarized below.

Additional categories of Scope 3

For SBTi Net-Zero Standard target setting process, we also screened the immaterial Scope 3 categories of ERM. This is for the full coverage of Scope 3 while setting the target. The immaterial categories included fuel and energy related activities (category 3) and waste (category 5). During the target validation process, SBTi suggested ERM start reporting these two categories. In alignment with SBTi's suggestion, we collected actual data for category 3 and started reporting from FY24. ERM plans to collect actual waste data in FY25 and start reporting actual emissions.

In the last year, the inclusion of purchased goods and services and capital goods has significantly altered our Scope 3 profile. However, inclusion of fuel and energy related activities doesn't have a significant impact in our Scope 3 profile – as this is the smallest emission category in Scope 3. Our GHG inventory development is now aligned with the SBTi Corporate Net-Zero Standard, and the results of this review have been incorporated into our updated implementation plan to meet our net-zero and science-based targets.

Inclusion of well-to-wheel (WTW) emissions in Scope 3 categories 6 & 7

Well-to-wheel emissions include all emissions (both upstream and final combustion) related to the use of a fuel for travel. This includes extraction of fuel, refining it, distributing the fuel to stations, and combustion of fuels in vehicles. As per the recommendation from SBTi, ERM changed our tank-to-wheel method to well-to-wheel to account all upstream emissions from our business travel and employee commuting. We also restated our historical emissions from these two categories to account for WTW emissions. These additions have significantly affected our Scope 3 profile for these two categories.

Note on commuter and homeworker emissions - Scope 3 category 7

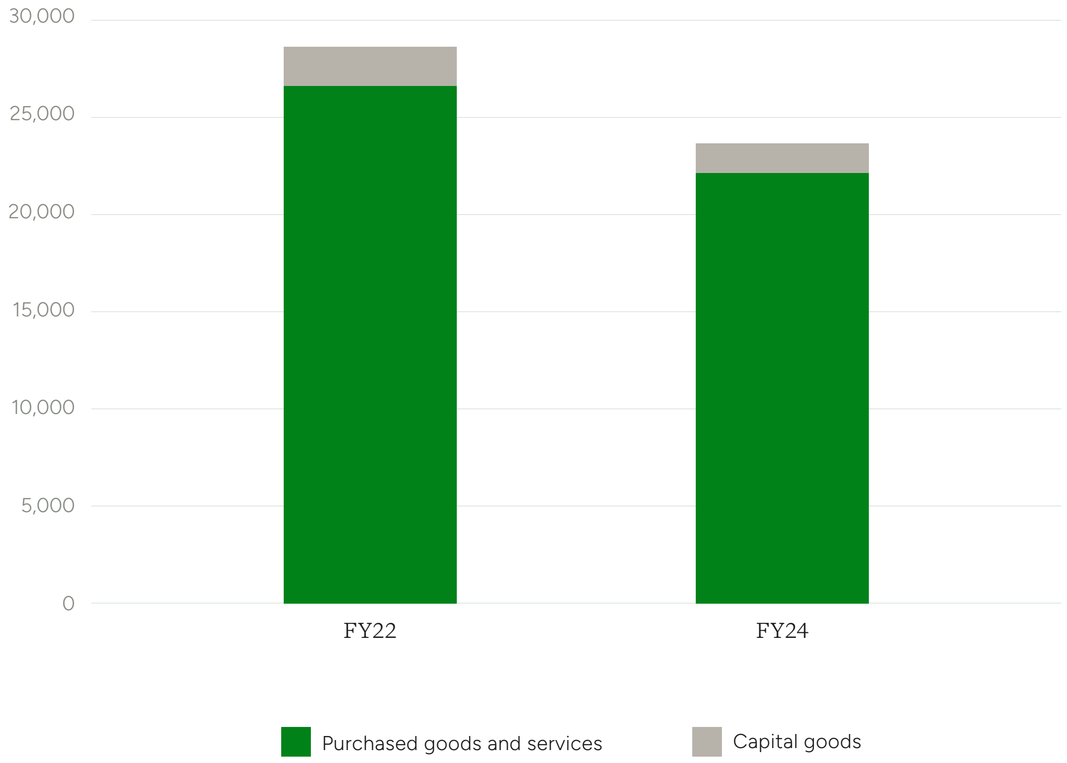
For the fourth year, we have calculated the associated energy use and GHG emissions from home-based working given that many of our employees work a portion of their time at home. Capturing this additional energy use and associated carbon emissions gives us a more complete understanding of our Scope 3 emissions.

ERM conducts the Global Commuter and Homeworker survey once every two years to capture accurate commuter and homeworker data from our employees. The last survey was conducted in FY23. In this survey we also collected data around renewable energy use while working from home which is incorporated in our calculation of homeworker GHG emissions. Our Global Commuter and Homeworker survey achieved a response rate of 67% globally, which is higher than industry standards. We used the changed headcount of FY24 to represent FY24 commuter and homeworker data. Further, the FY24 data was added to our carbon data management platform, Ecometrica, which calculates the commuter emissions for various types of travel (e.g., car, public transport, etc.) and the additional energy demand associated with home working, applying residential heating and cooling data based on country-specific emission factors. For renewable energy homeworker data, heating is applied but electricity is applied as zero coefficient to increase accuracy of data.

In FY24, we calculated 3,570 tCO2e emissions from employee commuting and 3,613 tCO2e associated with the additional energy demand from our employees working from home, for a total of 7,183 tCO2e. For comparison, our FY24 emissions are approximately 24% less than our employee commuting emissions of 9,499 tCO2e in FY20, which included less than 3 months of COVID travel restrictions and fewer employees than during FY24. Please note all commuter emissions are restated based on well-to-wheel calculation.

We do not include the estimated energy demand associated with working from home in our total GHG footprint, as it is voluntary reporting under the GHG Protocol and lacks final standards and guidance. We will continue to track the development of standards and guidance with respect to homeworker data reporting.

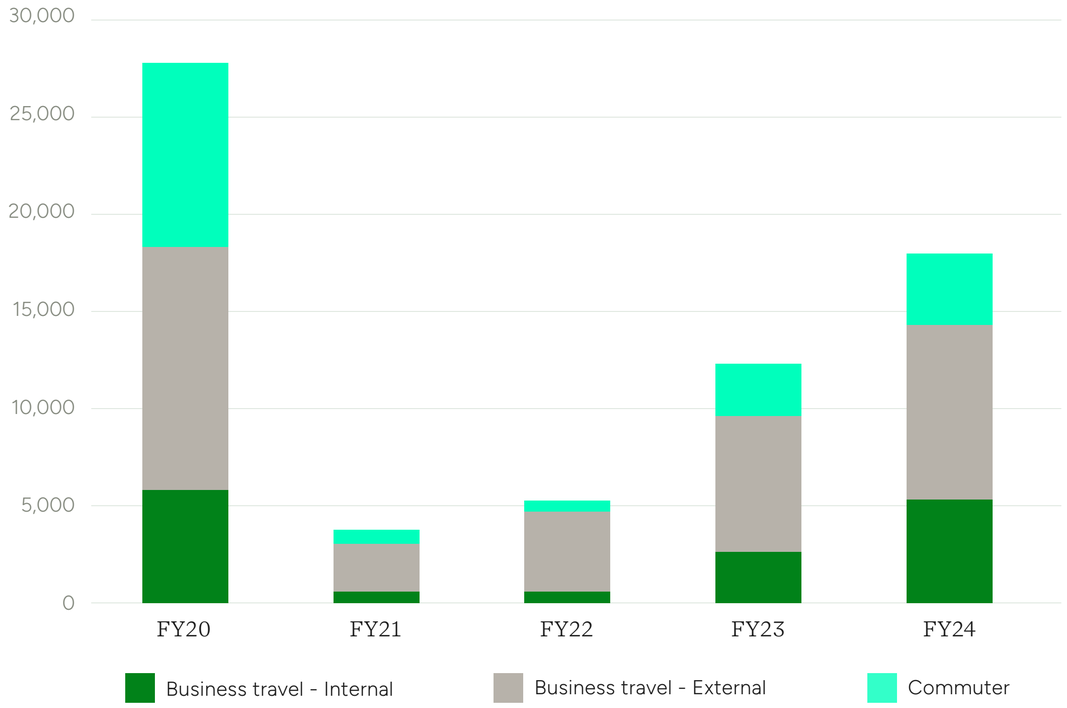
Scope 3 categories 1 & 2: Purchased goods and services & capital goods



Our category 1 & 2 emissions have reduced since the FY20 base year. Category 1 (purchased goods and services) and category 2 (capital goods) are calculated based on the spend-based method as per the GHG protocol. We have used EEIO 2016 and EEIO 2021 emission factors (with inflation) for our base year and most recent year respectively. The 2021 emission factors, are slightly lower than the 2016 factors, and this is the primary driver reason for the reduction in category 1 & 2 emissions.

We plan to move to supplier-specific reporting where appropriate and will start engaging with suppliers to identify the optimum approach to securing quality data across our supply chain. Further detail is set out in our Decarbonization Strategy and Sustainable Supply Chain Management Strategy.

Scope 3 categories 6 & 7: Business travel & employee commuting (tCO2e)[1]



Financial year	Emission fromair travel (tCO2e)	Passenger air travel kilometer
FY24	10,542	12,12,60,235
FY23	6,247	10,70,52,879
% increase from FY23 to FY24	69%	13%

[1] Business travel internal is non-project related travel and business travel external is project related travel.

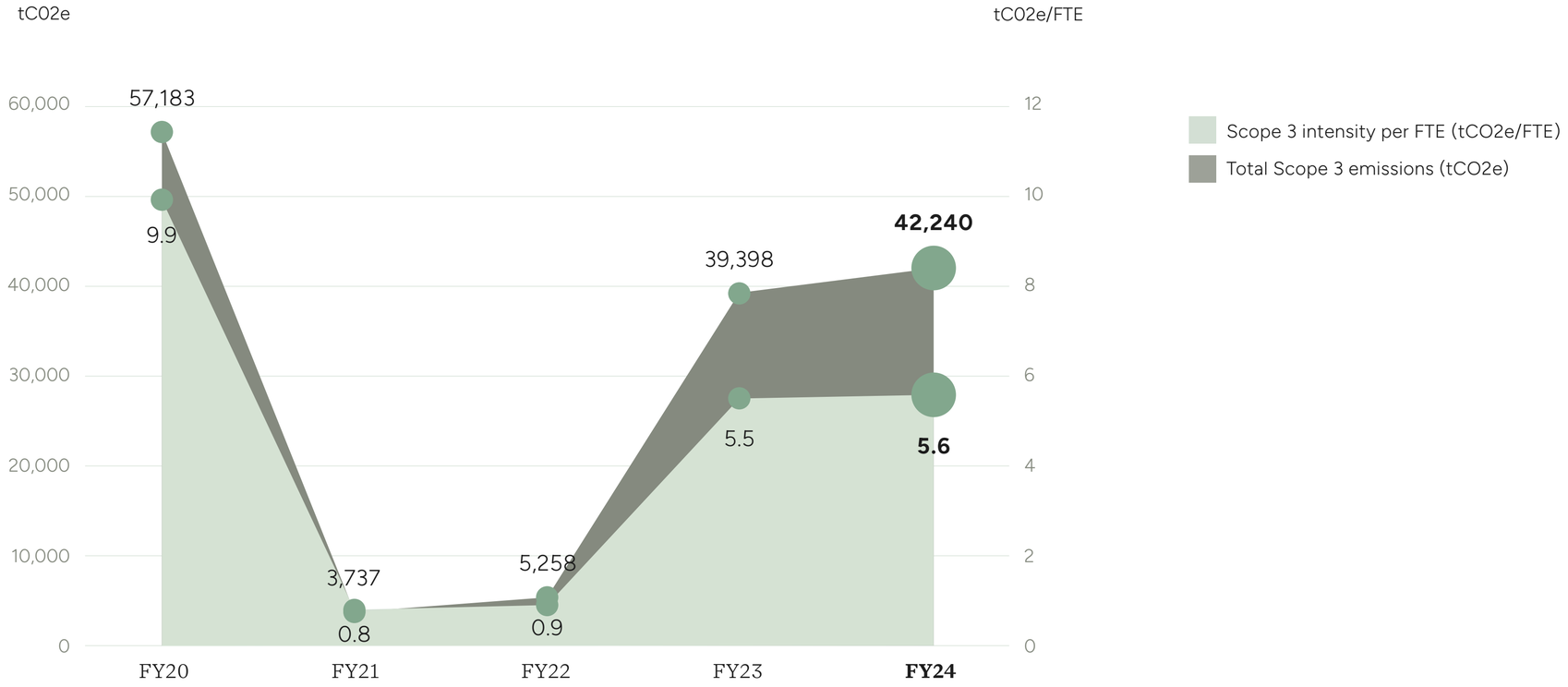
Categories 6 & 7 have reduced compared with the FY20 base year but show an increase since FY21 as travel resumes after the pandemic. Emissions associated with business travel and employee commuting are two of our largest Scope 3 categories (categories 6 and 7) after category 1 purchased goods & services.

ERM applies the UK BEIS emission factors which incorporate an adjustment for the aviation load factor (aligned with passenger seat occupancy). There is a lag in data collection, and the increased load factor resulting from the pandemic period contributed to an increase in the BEIS emission factors in 2023 compared with 2022. This change in the factor explains the greater increase in air travel emissions (69%) compared with the increase in miles flown (13%).

The increase in miles flown is attributed to a one-off event to support our business global operational planning.

Scope 3 total emissions and intensity per FTE FY20 - FY24 (tCO2e)[1, 2]

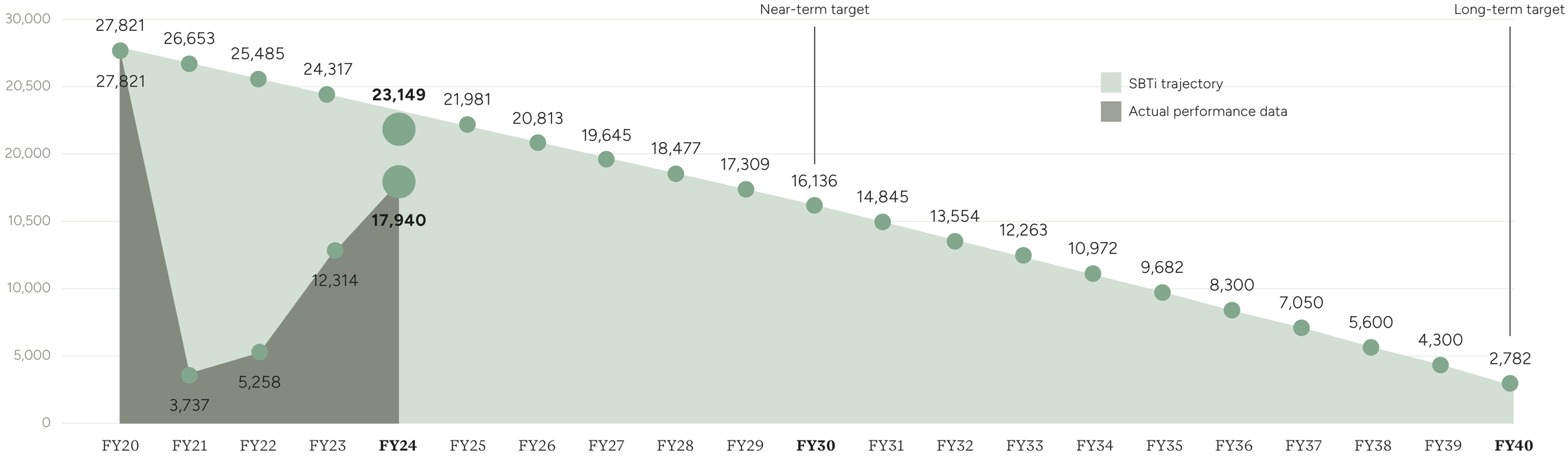
GRI 305-4



[1] Scope 3 GHG emissions normalized by average full-time equivalent employees (FTEs).
[2] tCO2e = tonnes of carbon dioxide equivalent.

Scope 3 performance against SBTi Net-Zero Standard trajectory FY20 - FY40 (tCO2e)[1, 2]

GRI 305-3



[1] ERM's near-term science-based target is to reduce absolute scope 3 GHG emissions from business travel and employee commuting 42% by FY30 from a FY20 base year. ERM's long-term science-based target is to reduce absolute scope 3 GHG emissions from business travel, employee commuting and purchased goods and services 90% by FY40 from a FY20 base year.

[2] In addition to the absolute targets, ERM has set a supplier engagement target that 45% of its suppliers by emissions covering purchased goods and services will have science-based targets by FY28.

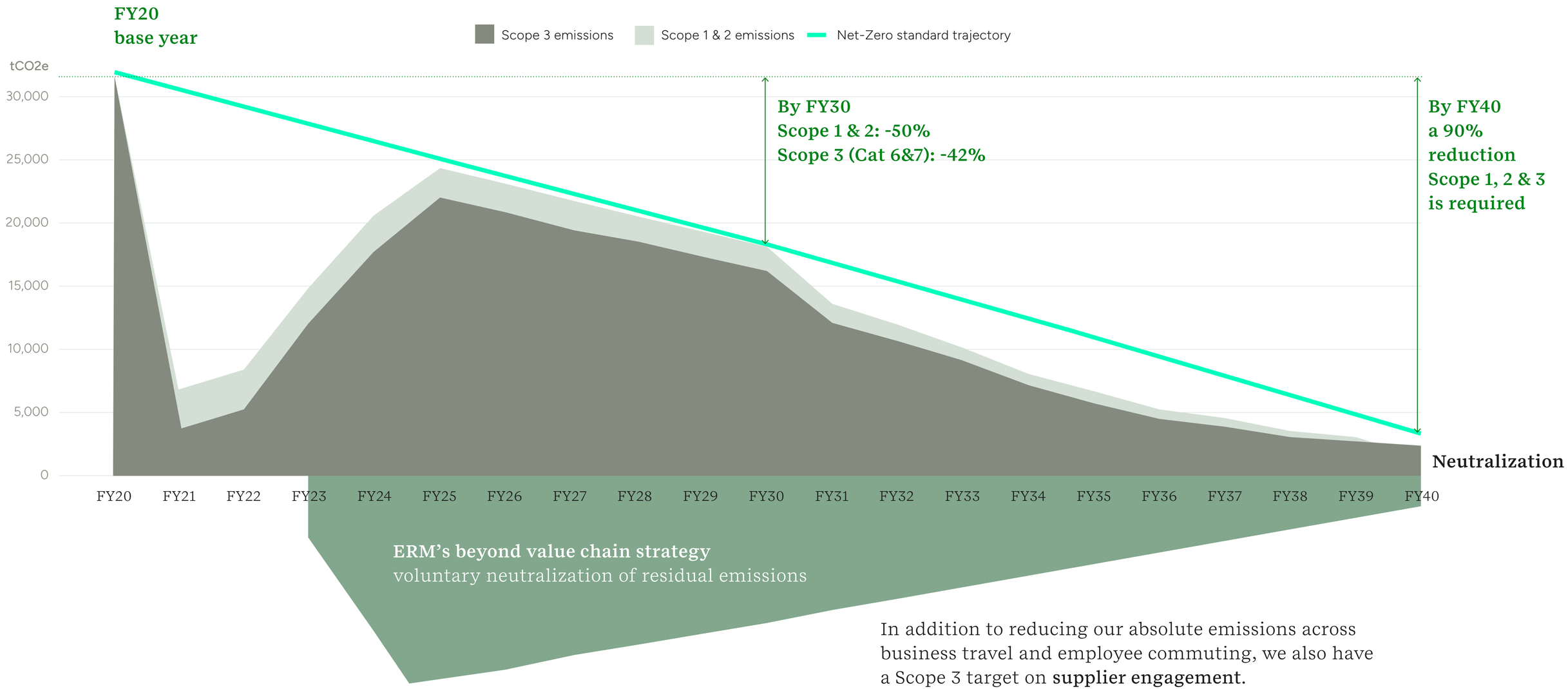
Progress against our SBTi targets

Despite an increase in emissions relative to FY23, ERM remains on track to meet our near and longer-term emissions reductions targets. We have updated our program of actions to address each of our material scopes of emissions with targeted interventions to address key challenges for our business, in particular, business travel.

Our Net-Zero Standard aligned decarbonization pathway to net-zero by 2040 is illustrated below and further information on our approach is set out in our ERM Decarbonization Strategy.

ERM's Net-Zero Standard aligned decarbonisation pathway to net-zero by 2040

This graphs shows our performance in absolute targets.



In addition to reducing our absolute emissions across business travel and employee commuting, we also have a Scope 3 target on **supplier engagement.**

Data calculations and collation

All emissions data presented in our Sustainability Report 2024 is expressed as carbon dioxide equivalent (CO_2e) and includes all Kyoto gases and refrigerants. ERM uses the IPCC Fifth Assessment Report as a source of global warming potential (GWP) without climate feedback. All Scope 2 data has been calculated using a market-based approach, unless otherwise stated. For further information on market-based methods, please refer to www.ghgprotocol.org.

ERM uses Ecometrica as our sustainability management system to collect and manage our greenhouse gas data. Ecometrica uses emission factors from DEFRA, EEIO, EPA, IEA, IPCC, European Residual Mix factors and custom factors (derived for multiple sources). Ecometrica hosts these emission factors and regularly updates them when the latest factors are released, and data calculation is conducted within this platform. For calculation of new Scope 3 categories, including category 1 & category 2, ERM has used EEIO emission factors, in line with guidance from the GHG Protocol.

We report environmental data for offices that fall within ERM's materiality threshold (as defined in our Sustainability Reporting Protocol) per fiscal year (FY), which runs 1 April to 31 March. ERM's Sustainability Reporting Protocol provides guidance for the development and maintenance of robust data collection systems that will measure sustainability performance across all key performance areas in a consistent, accurate and auditable manner.

We work with property owners to improve our access to actual energy consumption data for leased offices. Where data is unavailable, we use the average data method as per the GHG protocol and estimate the energy data using office floor size. Sources excluded are reviewed annually to determine if emissions are considered de minimis. For FY24, offices that encompassing fewer than 50 square meters, excluding dedicated server-hosting spaces, were considered de minimis and excluded from energy data collection and reporting process. In FY24, several ERM offices moved to virtual and shared spaces with low occupancy, and these offices qualify as de minimis.

Regardless of whether an office meets the de minimis exemption or not, we collect data to calculate business travel emissions for all ERM employees. We introduced use of Rydoo, a centralized expense claim system, which helps improve data completeness.

Acquisitions

ERM has undergone a period of sustained growth. All GHG data for new offices or offices added through ERM acquisitions during FY24 have been included where available. We calculated all GHG data for the offices of the following ERM acquisitions: Arcus, RCG, OPEX, Point Advisory, MarineSpace, Shelton Group and Libryo. Scope 1 & 2 data for Coho and NINT are calculated. Scope 3 data of these acquisitions will be included from FY25, when these acquisitions will be integrated fully into our systems. TBM TBZ is a new acquired business, which is not yet part of our data collection cycle.

Assurance

We recognize the importance of accuracy in the data we are disclosing and transparency in our reporting processes. For the third year, we have undertaken external assurance of our GHG emissions data, as part of our approach to continuous improvement and in preparation for enhanced financial disclosure requirements in the United Kingdom, European Union and other key jurisdictions within which we operate. We will continue to undertake assurance of our reporting consistent with stakeholder expectations and evolving best practice.

Our FY24 GHG emissions inventory (GHG Assertion) data for 1 April 2023 to 31 March 2024, was subject to a limited level of assurance and materiality in line with the GHG Protocol Corporate Standard (revised edition, Jan 2015) and ISO 14064 - Part 3 for GHG emissions. The verification procedure is based on current best practice and is in accordance with ISAE 3000 and ISAE 3410.

Click here to read the third-party data Assurance Statement.

Compensating for our residual emissions

Beyond value chain mitigation

ERM will continue to prioritize emission reductions within our Scope 1, 2 and 3 emissions as set out in our Decarbonization Strategy. In parallel, we believe it is our responsibility to mitigate residual emissions on our way to meeting our net-zero target. Residual emissions are those GHG emissions that remain while we implement measures to achieve our net-zero standard commitment. As a contribution to the mitigation of these residual emissions, we support climate action beyond our value chain. This in no way diminishes our primary focus on reducing our direct emissions. We believe that the voluntary carbon market can play a valuable role in contributing to global efforts to limit climate change and in scaling finance flows for nature and emerging technologies. We have therefore engaged with the voluntary carbon market by purchasing and retiring carbon credits.

ERM is a member of the Beyond Value Chain Mitigation (BVCM) working group of the World Business Council for Sustainable Development (WBCSD) and the Natural Climate Solutions Alliance (NCSA). As part of our active engagement with these entities, we have committed to a high integrity BVCM approach that includes natural climate solutions and have followed the relevant guidance in our approach. We started mitigating our residual emissions in FY23, for which we purchased and retired carbon credits for all of our Scopes 1 & 2 emissions and Scope 3 emissions from internal travel.

In FY24, we have aligned our approach with the Claims Code of Practice set out by the Voluntary Carbon Markets Integrity Initiative (VCMI). VCMI's aim is to "enable high-integrity voluntary carbon markets which contribute to the goal of the Paris Agreement, bringing benefits for people and the planet". Its Claims Code aims to accelerate corporate engagement with the carbon markets as part of net-zero pathways, and to bring confidence and credibility to claims that involve the use of carbon credits.

Under the VCMI Claims Code, companies can make Silver, Gold or Platinum claims. ERM has elected to apply for a Carbon Integrity Gold claim with the aim to be one of the early adopters, demonstrating leadership to our clients and peers. A VCMI Gold claim requires the purchase and retirement of high-quality carbon credits in an amount equal to or greater than 50%, and less than 100%, of a company's remaining emissions once it has demonstrated progress towards its near-term emission reduction targets.

FY23 Credits

In FY23, as part of a portfolio approach, ERM purchased credits from a project which provides cookstoves to communities in Burundi, as part of our beyond value chain mitigation. A portion of these credits were in excess of the number of retirements needed in FY23 and were held pending use in FY24. Since then, new values have been published for a key baseline parameter (fNRB) and most cookstove projects are migrating to new methodologies that are in line with current best practice. We therefore decided to retire these credits, but not to use them explicitly within the FY24 portfolio.

This decision has been undertaken as a precautionary matter to ensure that our stakeholders have confidence in the integrity of our choice of credits and does not reflect upon the specific project or the intrinsic value of cookstove projects generally. We remain committed to supporting community projects such as cookstoves and recognise the significant economic, social and environmental benefits which they bring to communities across the globe.

As a reflection of our ongoing commitment to supporting social enterprises providing cookstoves, we have chosen to increase funding from The ERM Foundation to such projects, to ensure this critical work continues.

Climate data reference list

ERM uses the Fifth Assessment Report as a source of global warming potential (GWP) without climate feedback, as shown in the following reference table:

Gases	Activity	Geography	Reference
CO2, CH4, N2O	Homeworker	All countries (except US, Canada)	Ecometrica homeworker model 2024
CO2, CH4, N2O	Auto rickshaw (petrol)	Asia	India GHG Program, India Specific Road Transport Emission Factors (2015).
CO2, CH4, N2O	AVE train	Spain	Renfe (2022). Informe De Responsabilidad Social Y Gobierno Corporativo 2021, available online at: https://www.renfe.com/es/en/renfe-group/renfe-group/ responsible-company
CO2, CH4, N2O	Average battery electric vehicle (combined emissions)	United Kingdom, Earth	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	Average bus, upstream emissions	United Kingdom, Earth	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	Average German bus	Germany	Deutsche Bahn (2023). 2022 Integrated Report. https://nachhaltigkeit.deutschebahn.com/en/key-figures
CO2, CH4, N2O	Average passenger car	United States, Earth, North America	EPA (2024). GHG Emission Factors Hub. Center for Corporate Climate Leadership. March 2024. https://www.epa.gov/climateleadership/ghg-emission-factors-hub. Accessed March 2024.
CO2e	Average petrol car, upstream emissions	Earth, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Average plug-in hybrid electric vehicle (fuel emissions)	Earth	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.

Gases	Activity	Geography	Reference
CO2, CH4, N2O	BC Motorcycle, gasoline	British Columbia (Canada)	BCME (2024). 2023 B.C. Best Practices Methodology for Quantifying Greenhouse Gas Emissions For Public Sector Organizations, Local Governments And Community Emissions. January 2024. British Columbia Ministry of Environment and Climate Change Strategy. Accessed March 2024.
CO2e	Bioethanol, upstream emissions	Earth, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Bus, average	United States, Earth, North America	EPA (2024). GHG Emission Factors Hub. Center for Corporate Climate Leadership. March 2024. https://www.epa.gov/climateleadership/ghg-emission-factors-hub. Accessed March 2024.
CO2, CH4, N2O	Bus, average	Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	Bus, average, unknown fuel	Netherlands	CO2 emissiefactoren (2023), http://co2emissiefactoren.nl/lijst-emissiefactoren/. Accessed March 2023
CO2, CH4, N2O	Canada homeworker	Canada	Natural Resources Canada (2023). Residential End-Use Model https://oee.nrcan.gc.ca/corporate/statistics/neud/dpa/menus/trends/comprehensive/trends_res_ca.cfm #CIBSE (2012). Energy efficiency in buildings. Guide F. The Chartered Institution of Building Services Engineers. #Statistics Canada (2022). Report on Energy Supply and Demand in Canada (57-003-x2022001). 2019 Revised. Online: https://www150.statcan.gc.ca/n1/en/catalogue/57-003-X Released May 2, 2022. #EC (2023). National Inventory Report. Greenhouse Gas Sources and Sinks in Canada: 1990 - 2021. Environment Canada. Online: https://data-donnees.ec.gc.ca/data/substances/monitor/canada-s-official-greenhouse-gas-inventory
CO2, CH4, N2O	Car, average (unknown fuel)	Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.

Gases	Activity	Geography	Reference
CO2, CH4, N2O	Car, diesel, average	United States, Earth, North America	EPA (2024). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022. United States Environmental Protection Agency. Online: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2022
CO2, CH4, N2O	Car, diesel, average	Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Car, gasoline, average	Canada	EC (2023). National Inventory Report. Greenhouse Gas Sources and Sinks in Canada: 1990 - 2021. Environment Canada. Online: https://data-donnees.ec.gc.ca/data/substances/monitor/canada-s-official-greenhouse-gas-inventory/
CO2, CH4, N2O	Car, large	Earth, Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Car, medium	Earth, Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Car, petrol hybrid, average	Earth, Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Car, petrol hybrid, small	Earth, Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Car, petrol, average	Earth, Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Car, small (unknown fuel)	Earth, Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.

Gases	Activity	Geography	Reference
CO2, CH4, N2O	Diesel Vehicles (post 2004)	Australia	Commonwealth of Australia 2022 (Department of the Environment and Energy). National Greenhouse Account Factors (NGA) - Australian National Greenhouse Accounts. February 2023. Online: https://www.dcceew.gov.au/sites/default/files/documents/national-greenhouse-accounts-factors-2022.pdf
CO2, CH4, N2O	Diesel, 100% mineral	Europe, Turkey, Brazil	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Diesel, mobile combustion	United States, Earth, North America	EPA (2023). GHG Emission Factors Hub. Center for Corporate Climate Leadership. April 2023. https://www.epa.gov/climateleadership/ghg-emission-factors-hub. Accessed April 2023.
CO2, CH4, N2O	Diesel, retail station biofuel blend	United Kingdom, Finland, Ireland	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	District Heating (country default)	Germany	Umwelt Bundesamt (2022). CO2-Emissionsfaktoren für fossile Brennstoffe, https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/cc_29-2022_emission-factors-fossil-fuels.pdf
CO2, CH4, N2O	Electricity - T & D losses, eGrid	United States	EPA (2024). eGrid2022. Release : 1/30/2024. Online: https://www.epa.gov/egrid/download-data. Accessed February 9, 2024.
CO2, CH4, N2O	Electricity - transmission & distribution losses	Canada	EC (2023). National Inventory Report. Greenhouse Gas Sources and Sinks in Canada: 1990 - 2021. Environment Canada. Online: https://data-donnees.ec.gc.ca/data/substances/monitor/canada-s-official-greenhouse-gas-inventory/
CO2, CH4, N2O	Electricity - transmission & distribution losses	United States	EPA (2024). eGrid2022. Release : 1/30/2024. Online: https://www.epa.gov/egrid/download-data. Accessed February 9, 2024.
CO2, CH4, N2O	Electricity - transmission & distribution losses	United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.

Gases	Activity	Geography	Reference
CO2, CH4, N2O	Electricity - transmission & distribution losses	All countries except Canada, United States and United Kingdom.	United Nations (2023). UN Statistics Division - 2020 Energy Balance Visualizations. https://unstats.un.org/unsd/energystats/dataPortal/ #IPCC (2019). Revised IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge. (No refinement from 2006)
CO2, CH4, N2O	Electricity grid	All countries except Canada, Brazil and United Kingdom.	United Nations (2023). UN Statistics Division - 2020 Energy Balance Visualizations. https://unstats.un.org/unsd/energystats/dataPortal/ #IPCC (2019). Revised IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.
CO2, CH4, N2O	Electricity grid	Canada	EC (2023). National Inventory Report. Greenhouse Gas Sources and Sinks in Canada: 1990 - 2021. Environment Canada. Online: https://data-donnees.ec.gc.ca/data/substances/monitor/canada-s-official-greenhouse-gas-inventory/
CO2, CH4, N2O	Electricity grid	Brazil	Governo do Brasil (2023). MCTIC. Arquivos dos fatores médios de emissão de CO2 grid mês/ano. Ministério da Ciência, Tecnologia, Inovações e Comunicações. Online: https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/sirene/dados-e-ferramentas/fatores-de-emissao. Accessed June 2023.
CO2, CH4, N2O	Electricity grid	United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	Electricity grid	Netherlands	CO2 emissiefactoren (2023), http://co2emissiefactoren.nl/lijst-emissiefactoren/. Accessed March 2023
CO2e	Electricity grid, aggregated, national	Australia	Commonwealth of Australia 2023 (Department of the Environment and Energy). National Greenhouse Account Factors (NGA) - Australian National Greenhouse Accounts. March 2024. Online: https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-factors-2023
CO2e	Electricity grid, generated, upstream emissions	Canada	EC (2023). National Inventory Report. Greenhouse Gas Sources and Sinks in Canada: 1990 - 2021. Environment Canada. https://publications.gc.ca/collections/collection_2022/eccc/En81-4-2020-3-eng.pdf

Gases	Activity	Geography	Reference
CO2e	Electricity grid, generated, upstream emissions	Netherlands	CO2 emissiefactoren (2023), http://co2emissiefactoren.nl/lijst-emissiefactoren/. Accessed March 2023
CO2e	Electricity grid, T&D losses, upstream emissions	United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	Electricity grid, generated, upstream emissions	All countries except Canada, United States and United Kingdom.	Department for Business, Energy and Industrial Strategy (2021). 2021 Government GHG Conversion Factors for Company Reporting.
CO2e	Electricity grid, T&D losses, upstream emissions	Earth	Department for Business, Energy and Industrial Strategy (2021). 2021 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Diesel car (small, medium, large)	Earth, Europe	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Petrol hybrid car (small, medium, large)	Earth, Europe	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Petrol car (small, medium, large)	Earth, Europe	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	Eurostar, upstream emissions	Earth, Europe	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Light rail	Earth, Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.

Gases	Activity	Geography	Reference
CO2, CH4, N2O	Ferry, average (all passengers), upstream also	Earth, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Motorcycle, petrol, small	Japan, Earth, Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	US homeworker	United States	CIBSE (2012). Energy efficiency in buildings, CIBSE Guide F. The Chartered Institution of Building Services Engineers. #EIA (2023). 2020 Residential Energy Consumption Survey. https://www.eia.gov/consumption/residential/data/2020/index.php?view=consumption#by%20End%20uses%20by%20fuel EPA (2024). eGrid2022. Release: 1/30/2024. Online: https://www.epa.gov/egrid/download-data EPA (2023). GHG Emission Factors Hub. Center for Corporate Climate Leadership. April 2023. https://www.epa.gov/climateleadership/ghg-emission-factors-hub. Accessed April 2023.
CO2, CH4, N2O	Flights	Earth, Europe, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Gasoline	United States, Earth, North America	EPA (2023). GHG Emission Factors Hub. Center for Corporate Climate Leadership. April 2023. https://www.epa.gov/climateleadership/ghg-emission-factors-hub. Accessed April 2023.
CO2, CH4, N2O	Gasoline passenger cars	United States, Earth, North America	EPA (2024). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2022. United States Environmental Protection Agency. Online: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2022
CO2, CH4, N2O	Gasoline passenger vehicle	Japan	GIO, CGER, NIES (2024), National Greenhouse Gas Inventory of Japan. Greenhouse Gas Inventory Office of Japan (GIO), Center for Global Environmental Research (CGER), National Institute for Environmental Studies (NIES).
CO2, CH4, N2O	Gasoline Vehicles (post 2004)	Australia	Commonwealth of Australia 2023 (Department of the Environment and Energy). National Greenhouse Account Factors (NGA) - Australian National Greenhouse Accounts. March 2024. Online: https://www.dcceew.gov.au/climate-change/publications/national-greenhouse-accounts-factors-2023

Gases	Activity	Geography	Reference
CO2, CH4, N2O	Heat/steam, good quality CHP: UK average, upstream also	Earth, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	High speed rail - China	China	Liying Wang, Ping Yin, Shangqing Liu, CO2 emissions reduction performance of China's HSR based on substitution effect and demand effect, Transportation Safety and Environment, Volume 5, Issue 3, June 2023
CO2, CH4, N2O	Intercity rail	United States, Earth, North America	EPA (2023). GHG Emission Factors Hub. Center for Corporate Climate Leadership. April 2023. https://www.epa.gov/climateleadership/ghg-emission-factors-hub. Accessed April 2023.
CO2, CH4, N2O	Italian high speed train	Italy	Italo (2023). 2022 Sustainabiliy Report. https://italospa.italotreno.it/static/upload/sus/sustainability-report-2022.pdf
CO2, CH4, N2O	Plug-in hybrid electric vehicle (fuel emissions and emissions from generated electricity)	Earth	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	Car, upstream emissions	Earth, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	Light rail, upstream emissions	Earth, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	Medium petrol motorcycle, upstream emissions	Earth, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	Metro, electric with upstream	Netherlands	CO2 emissiefactoren (2023), http://co2emissiefactoren.nl/lijst-emissiefactoren/ accessed March 2023
CH4/l	Motorcycle, average	Canada	EC (2023). National Inventory Report. Greenhouse Gas Sources and Sinks in Canada: 1990 - 2021. Environment Canada. Online: https://data-donnees.ec.gc.ca/data/substances/monitor/canada-s-official-greenhouse-gas-inventory/

Gases	Activity	Geography	Reference
CO2, CH4, N2O	Motorcycle, average	United States, Earth, North America	EPA (2023). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021. United States Environmental Protection Agency. Online: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021
CO2, CH4, N2O	Motorcycle, petrol, small	Japan, Earth, Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Natural gas	Canada	EC (2023). National Inventory Report. Greenhouse Gas Sources and Sinks in Canada: 1990 - 2021. Environment Canada. Online: https://data-donnees.ec.gc.ca/data/substances/monitor/canada-s-official-greenhouse-gas-inventory/
CO2, CH4, N2O	Natural gas (100% mineral), also upstream	Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Natural gas, national average, stationary combustion	United States, North America	EPA (2023). GHG Emission Factors Hub. Center for Corporate Climate Leadership. April 2023. https://www.epa.gov/climateleadership/ghg-emission-factors-hub. Accessed April 2023.
CO2, CH4, N2O	Natural gas, stationary, commercial	United States, North America	EPA (2023). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021. United States Environmental Protection Agency. Online: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021
CO2, CH4, N2O	Passenger Car Rental, upstream emissions	Earth	EPA (2023). Supply Chain Greenhouse Gas Emission Factors v1.2 by NAICS-6. Available at: https://edg.epa.gov/metadata/catalog/search/resource/details.page?uuid=https://doi.org/10.23719/1528686.
Biogenic CO2	Passenger vehicle, ethanol	Brazil	GHG Protocol Brasil (2022). Ferramenta GHG Protocol 2022. Version 2022.0.1. Programa Brasileiro GHG Protocol. Available online: https://eaesp.fgv.br/centros/ centro-estudos-sustentabilidade/projetos/programa-brasileiro-ghg-protocol.
CO2, CH4, N2O	Petrol, 100% mineral	Europe, Turkey	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.

Gases	Activity	Geography	Reference
CO2, CH4, N2O	Petrol, retail station biofuel blend	United Kingdom, Finland, Ireland	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Purchased Steam/Hot Water	United States, North America	EPA (2024). GHG Emission Factors Hub. Center for Corporate Climate Leadership. March 2024. https://www.epa.gov/climateleadership/ghg-emission-factors-hub. Accessed March 2024.
R22	R22	Earth	IPCC (2007). IPCC Fourth Assessment Report: Climate Change 2007. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.
HFC	Refrigerant gas HFC-134a	Earth	IPCC (2007). IPCC Fourth Assessment Report: Climate Change 2007. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.
CFC	Refrigerant gas R11, R12	Earth	IPCC (2013). IPCC Fifth Assessment Report: Climate Change 2013. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.
R401a	Refrigerant gas R401a	Earth	IPCC (2013). IPCC Fifth Assessment Report: Climate Change 2013. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.
HFC-407a	Refrigerant gas R407c	Earth	IPCC (2007). IPCC Fourth Assessment Report: Climate Change 2007. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.
HFC-410a	Refrigerant gas R410a	Earth	IPCC (2007). IPCC Fourth Assessment Report: Climate Change 2007. Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge.
CO2e	Regular taxi, and its upstream emissions	Japan, Europe, Turkey, United Kingdom, Earth	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Small battery electric vehicle (combined emissions)	United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	Small petrol motorcycle, upstream emissions	Earth, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.

Gases	Activity	Geography	Reference
CO2e	Small unknown fuel car, upstream emissions	Earth, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	TGV train	Europe	SNCF (2022). INFORMATION SUR LA QUANTITE DE GAZ A EFFET DE SERRE EMISE A L'OCCASION D'UNE PRESTATION DE TRANSPORT.
CO2e	Thalys train	Europe	SNCF (2022). INFORMATION SUR LA QUANTITE DE GAZ A EFFET DE SERRE EMISE A L'OCCASION D'UNE PRESTATION DE TRANSPORT.
CO2, CH4, N2O	Train, Eurostar	Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2e	Train, international, upstream also	Netherlands	CO2 emissiefactoren (2023), http://co2emissiefactoren.nl/lijst-emissiefactoren/. Accessed March 2023
CO2, CH4, N2O	Train, national	Japan, Europe, Turkey, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.
CO2, CH4, N2O	Transit rail	United States, North America	EPA (2024). GHG Emission Factors Hub. Center for Corporate Climate Leadership. March 2024. https://www.epa.gov/climateleadership/ghg-emission-factors-hub. Accessed March 2024.
CO2, CH4, N2O	Truck, light-duty, gasoline, average	United States, Earth, North America	EPA (2023). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2021. United States Environmental Protection Agency. Online: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2021
CO2, CH4, N2O	Truck, light-duty, diesel, average	United States, Earth, North America	EPA (2022). Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2020. United States Environmental Protection Agency. Online: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2020
CO2, CH4, N2O	Underground train, and upstream	Earth, Europe, United Kingdom	Department for Business, Energy and Industrial Strategy (2023). 2023 Government GHG Conversion Factors for Company Reporting.

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